Manitoba Agriculture

Information Update

GUIDELINES FOR ESTIMATING MANURE HAULING COSTS

89-04762/

DATE: March, 1989

This publication is intended to provide a format for calculating the costs of hauling livestock manure. The cost figures in this worksheet are estimates based on a number of assumptions. They were not obtained from an actual survey. The assumptions which are the basis for estimates are outlined in the supporting pages. Adjustments will be necessary for individuals who want to calculate their own costs and where the livestock herd, equipment and practices differ from the budget.

Accurate, up-to-date, records are essential for effective application of these guidelines. Without accurate cost records on equipment and labour, accurate costs cannot be determined.

GUIDELINES FOR ESTIMATING MANURE HAULING COSTS

A. OPERATING COSTS	Total Cost	Your Cost
1.01 Fuel	$ 624	
1.02 Repairs and Maintenance	932	
1.03 Insurance (tractors)	61	
1.04 Interest on Operating	113	
TOTAL OPERATING COSTS	$1,730	
B. FIXED COSTS		
2.01 Depreciation	$3,494	
2.02 Investment	1,829	
TOTAL FIXED COSTS	$5,323	
C. LABOUR COSTS	$ 604	
TOTAL COST	$7,657	

COST ANALYSIS	Per m^3 (2640 m^3/yr)	Your Cost	Per 1000 gallons (580,000 gal/yr)	Your Cost
Operating Costs	$0.66		$ 2.98	
Fixed Costs	2.02		9.18	
Labour Costs	0.23		1.04	
TOTAL COSTS	$2.91		$13.20/1000 gal.	

ASSUMPTIONS

This partial budget is based on hauling the liquid manure produced in a finishing pig operation housing 1,200 hogs. The information in the following table provides estimates of the liquid manure production in other types of operations.

Note: All costs are rounded to the nearest dollar.

SWINE	m^3 animal
Farrow-Weanling Operation (per sow in breeding herd)	9.1
Feeder Operation	2.2
Farrow-Finish (per sow in breeding herd)	2.2
DAIRY	
Milking Herd only (per cow)	20
Total Herd including replacements (per cow)	26

($1\ m^3 = 35 ft^3 = 220$ gallons)

WORKSHEET

ANNUAL MANURE PRODUCTION — Your Farm

	1,200	hogs
X	2.2	m^3/year
=	**2,640**	**m^3/year**

TIME REQUIRED TO HAUL MANURE

For this example the time per load is assumed to be:

Travel to & from fields	10	minutes
Loading & downtime	7	minutes
Unloading in field	5	minutes
Total	22	minutes/load

Tanker Volume:

13.6 m^3 (3000 gal)

Total Time = Manure produced ÷ volume of tanker x time per load

	2640	m^3
÷	13.6	m^3/load
X	22	minutes/load
÷	60	minutes
=	**71**	**hours**

CAPITAL INVESTMENT (MANURE HAULING SHARE)

New Cost x (Annual Hours Hauling Manure ÷ Total Annual Hours of Use) = Manure Share

Tractor #1 (manure tanker)

70 kW (90 HP); 500 hours total annual use;
10 year life; 20% salvage value; $45,500 new cost

	$45,500	new cost
÷	500	hours
X	71	hours
=	**$ 6,461**	**manure share**

Tractor #2 (manure pump/agitator)

50 kW (65 HP); 300 hours total annual use;
10 year life; 25% salvage value; $32,500 new cost

	$32,500	new cost
÷	300	hours
X	71	hours
=	**$ 7,692**	**manure share**

Tanker Wagon — Your Farm

$13.6m^3$ capacity (3000 gal); 7 year life;
10% salvage value; $12,000 new cost

$12,000 New Cost _____

Agitator Pump

7 year life; no salvage value;
$6,000 new cost

$ 6,000 New Cost _____

TOTAL EQUIPMENT VALUE

$ 6,461	Tractor #1	_____
+ 7,692	Tractor #2	_____
+ 12,000	Tanker Wagon	_____
+ 6,000	Agitator Pump	_____
= $32,153		_____

A. OPERATING COSTS

1.01 Fuel

To operate a manure handling system effectively requires two tractors, one for the P.T.O. agitator pump and the other for hauling and spreading on fields.

70 kW Tractor on Tank Wagon

Fuel consumption is 16.8 L/h

71	hours	
X 16.8	L/h	_____
X $ 0.30	/L	_____
= $358.00		_____

50 kW Tractor on Agitator Pump

Fuel consumption is 12.5 L/h

71	hours	
X 12.5	L/h	_____
X $ 0.30	/L	_____
= $266.00		_____

TOTAL FUEL COST

$358.00		
+ 266.00		_____
= $624.00	Annual Cost	_____

1.02 Repairs and Maintenance

Your Farm

Tractor repair and maintenance cost is 0.6% of the value of the tractor per 100 hours of total annual use.

Repairs & Maintenance = Manure Share of Value X 0.6% X Total Annual Hours of Use ÷ 100

Tractor #1

	$ 6,461	Manure Share
X	0.6	%
X	500	hours
÷	100	hours
= $	194	

Tractor #2

	$ 7,692	Manure Share
X	0.6	%
X	300	hours
÷	100	hours
= $	128	

Tanker Wagon (annual repair & maintenance is 2% of new cost)

	$12,000	Manure Share
X	2	%
= $	240	

Agitator Pump (annual repair & maintenance is 6% of new cost)

	$ 6,000	Manure Share
X	6	%
= $	360	

TOTAL REPAIRS AND MAINTENANCE

	$ 194	Tractor #1
+	138	Tractor #2
+	240	Tanker Wagon
+	360	Agitator Pump
= $	932	Annual Cost

1.03 Insurance **Your Farm**

Insurance held on tractor only. Cost of insurance $0.70 per $100 of value. Average lifetime value of equipment is the average of the new cost and salvage value.

Insurance Cost = (Manure Share of Value + Salvage) ÷ 2 X $0.70 ÷ 100

Tractor #1 (manure hauling portion)

	$ 6,461	Manure Share	
+	$ 1,292	Salvage Value	
÷	2		
X	$ 0.70	/$100 of Value	
÷	100		
=	$ 27		

Tractor #2 (manure handling portion)

	$ 7,692	Manure Share	
+	$ 1,923	Salvage Value	
÷	2		
X	$ 0.70	/$100 of Value	
÷	100		
=	$ 34		

TOTAL INSURANCE COST

	$ 27	Tractor #1	
+	$ 34	Tractor #2	
=	$ 61	Annual Cost	

1.04 Interest On Operating

1/2 of total operating costs at 14% interest per year.

(fuel + repair and maintenance + insurance) X 0.5 X 0.14

	$624	fuel	
+	$932	repairs & maintenance	
+	$ 61	insurance	
X	0.5		
X	14	% interest per year	
=	$113		

B. FIXED COSTS

Your Farm

2.01 Investment Cost

(New Cost + Salvage Value) ÷ 2 = Average Value
Average Value x Investment Rate = Investment Cost
Investment Rate assumed to be 10%
Consider manure hauling share of equipment value

Investment Cost = (Manure Share of Value + Salvage) ÷ 2 X Investment Rate

Tractor #1 (manure share)

	$ 6,461	Manure Share
+	$ 1,292	Salvage Value
÷	2	
X	10	%
=	$ 388	

Tractor #2 (manure share)

	$ 7,692	Manure Share
+	$ 1,923	Salvage Value
÷	2	
X	10	%
=	$ 481	

Tanker Wagon

	$12,000	Manure Share
+	$ 1,200	Salvage Value
÷	2	
X	10	%
=	$ 660	

Agitator Pump

	$ 6,000	Manure Share
+	$ 0	Salvage Value
÷	2	
X	10	%
=	$ 300	

TOTAL INVESTMENT COST

	$ 388	Tractor #1
+	481	Tractor #2
+	660	Tanker Wagon
+	300	Agitator Pump
=	$ 1,829	

2.02 Depreciation **Your Farm**

Depreciation = Manure Share of Value - Salvage Value ÷ Useful Life

Tractor #1

$ 6,461	Manure Share	
- $ 1,292	Salvage Value	
÷ 10	Years	
= **$ 517**		

Tractor #2

$ 7,692	Manure Share	
- $ 1,923	Salvage Value	
÷ 10	Years	
= **$ 577**		

Tanker Wagon

$12,000	Manure Share	
- $ 1,200	Salvage Value	
÷ 7	Years	
= **$ 1,543**		

Agitator Pump

$ 6,000	Manure Share	
- $ 0	Salvage Value	
÷ 7	Years	
= **$ 857**		

TOTAL DEPRECIATION

$ 517	Tractor #1	
+ 577	Tractor #2	
+ 1,543	Tanker Wagon	
+ 857	Agitator Pump	
= **$ 3,494**		

C. LABOUR

Number of hours required to haul and spread X rate per hour.

71	Hours	
X $ 8.50	/hour	
= **$604**		

FOR MORE INFORMATION SEE YOUR LOCAL MANITOBA AGRICULTURE OFFICE.

Budget
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